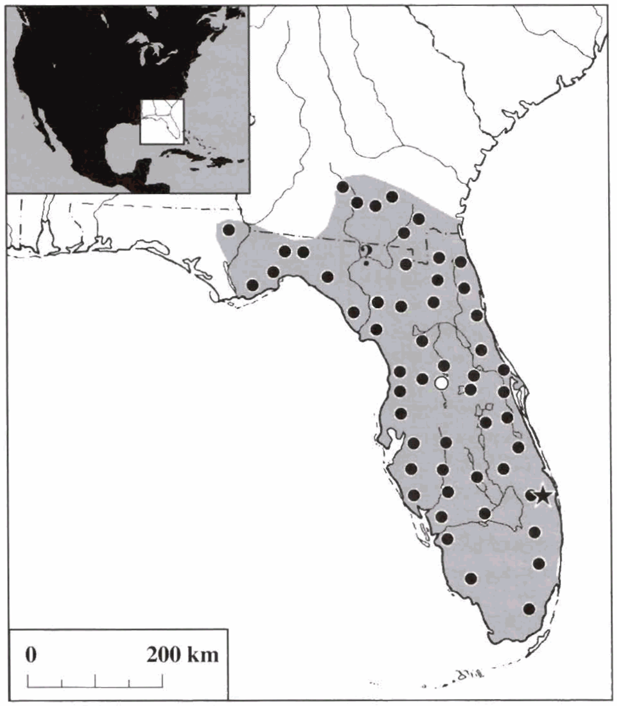
Catalogue of American Amphibians and Reptiles.

Dorcas, M.E., S.M. Poppy, C.H. Ernst, and J.W. Gibbons. 2003. *Regina alleni*.

Regina alleni
Striped crayfish snake

Helicops alleni Garman 1874:92. Type locality, "Hawkinsville, Florida, correctly 2 miles south of Crow's Bluff, Lake County (R.E. Hellman, pers. comm.)" (Schmidt 1953). Holotype, Museum of Comparative Zoology, Harvard University (MCZ) 2255, a 65 cm, wet adult specimen, collected by J.A. Allen, date of collection unknown (not examined by authors).
Liodytes alleni: Cope 1885:194.
Helicops allenii: Boulenger 1893:273.
Liodytes alleni alleni: Auffenburg 1950:13.
Liodytes alleni lineapiatus Auffenburg 1950:13. Type locality, "15 miles southwest of Miami, Dade County, Florida." Holotype, Auffenberg coll. 3119 (see **Remarks**), an adult male, collected by L.H. Babbitt, 15 March 1948 (not examined by authors).
Regina alleni: Rossman 1963: 8. First use of present combination.
L[*iodytes*]. *alleni*: Price 1983:294.

• **CONTENT.** No subspecies are recognized (see **Remarks**).



MAP. Distribution of *Regina alleni*; the circle represents the type locality, dots indicate other localities, and stars mark fossil sites.

• **DEFINITION.** *Regina alleni* is a small snake with three brown dorsal stripes running the length of its body. The head and neck are usually dark olive or brown, the throat usually yellowish, and the venter usually buff or straw-colored, but may be pink or orange. Some individuals have a midventral row of spots. The dorsum may appear to be iridescent, especially when wet.

Average adult TL ranges from 50–60 cm, and the maximum reported TL is 70.5 cm (Demuth 1997). Neonates are 15.3–29.1 cm in TL. The head is not much wider than the body. The nares are directed dorsolaterally, and, compared to congeners, the eye is large with a small pupil. The scales are smooth, except on the dorsal area of the tail, where they are always keeled. Females have 110–133 ventrals (males average 2–3 fewer) and 53–61 subcaudals (males have 59–69). Dorsal scale counts are 19-19-19 (or 19-19-17 in some males). A single internasal, coupled with smooth dorsal scales, distinguishes *R. alleni* from other members of the genus. Other scale characteristics include 2 prefontals, a single preocular, 2 nasals (partially divided by the nostril), 3–4 postoculars, loreal present, 1 + 2 temporals, 8 (sometimes 7 or 9) upper labials, 11 (sometimes 9 or 10) lower labials, and a divided cloacal scute (= anal plate).

The hemipenes are relatively short (to the 7th or 8th subcaudal, *in situ*), are slightly bilobed with a simple (undivided) sulcus spermaticus, and have no plicae. Two large basal hooks are on the same side as the sulcus, as are many small spines that decrease distally. The apical region is nude.

Rossman (1963) reported that each maxilla has 26–29 (mean 27) stout teeth with chisel-like tips, but Wright and Wright (1957) stated that *R. alleni* has 16–18 maxillary teeth, and Auffenberg (1950) reported 12–15 teeth on each maxilla. Other teeth counts are: dentary 28–32 (mean 29), palatine 14–18 (mean 16.5) and pterygoid 17–23 (mean 20).



FIGURE. Adult *Regina alleni* from DeLeon Springs, Volusia County, Florida. Note the smooth dorsal scales, body stripes, and the single internasal; the latter distinguishes *R. alleni* from its extant congeners. (photographs by Peter May).

• **DIAGNOSIS.** Within its range, the only striped natricine snakes with which *Regina alleni* might be confused are the Striped Crayfish Snake (*R. rigida*), Eastern Ribbon Snake (*Thamnophis sauritus*), and Common Garter Snake (*T. sirtalis*), all of which differ from *R. alleni* by having keeled scales the entire length of the dorsum. Juvenile Rainbow Snakes (*Farancia erytrogramma*), which also might be confused with *R. alleni*, have bright red stripes running the length of their dorsum and an undivided cloacal scute (= anal plate).

• **DESCRIPTIONS.** Descriptions of **general morphological characters** are in Garman (1874), Cope (1885, 1891, 1898), Boulenger (1893), Blanchard (1925), Perkins (1940, 1949), Schmidt and Davis (1941), Auffenberg (1950), Martof (1956), Wright and Wright (1957), Duellman and Schwartz (1958), Rossman (1963), Ernst and Barbour (1989), Conant and Collins (1998), Tennant and Bartlett (2000), and . Holman (1962), Auffenberg (1963), Rossman (1963), Wilson (1968), and Meylan (1982, 1995) described the **skeleton**. Other descriptions include: **teeth** (Rossman 1963, Rojas and Godley 1979), **chromosomes** (Eberle 1972), **cranial musculature** (Varkey 1979), **dorsal scale microdermatoglyphics** (Blaney 1977; Price 1982, 1983), and **hemipenis** (Rossman 1963).

• **ILLUSTRATIONS. Color photographs** are in Behler and King (1979), Ashton and Ashton (1981), Jackson (1983), Ernst and Barbour (1989), Tennant (1997), Gibbons and West (1998), Tennant and Bartlett (2000), and Ernst and Ernst (2003). **Black-and-white photographs** are in Ditmars (1936) and Wright and Wright (1957). **Colored drawings** are in Smith and Brodie (1982) and Conant and Collins (1998). Garman (1874), Schmidt and Davis (1941), and Wright and Wright (1957) provided **drawings** of the head. Auffenberg (1950) provided drawings of the head, dorsum, and venter.

Eberle (1972) illustrated the karyotype. Varkey (1979) included drawings of the muscles of the posterior region of the skull and anterior region of the vertebral column. Auffenberg (1963) illustrated vertebrae and Meylan (1982) showed photographs of vertebrae. Rossman (1963) provided drawings of a caudal vertebra, a maxilla, a maxillary tooth, a parietal bone, a basioccipital, and the dorsal pattern. Price (1983) provided photographs of the plicate microdermatoglyphic pattern and Blaney (1977) showed a black-and-white photomicrograph of dorsal scales. Cope (1898) provided drawings of the hemipenis. Franz (1977) illustrated feeding behavior.

• **DISTRIBUTION.** *Regina alleni* is found throughout Florida, except in the western portion of the Florida panhandle and the Florida Keys, and extends northward into southeastern Georgia. The following sources contain maps: Auffenberg (1950), Wright and Wright (1957), Behler and King (1979), Ashton and Ashton (1981), Smith and Brodie (1982), Jackson (1983), Ernst and Barbour (1989), Conant and Collins (1998), Tennant and Bartlett (2000), Ernst and Ernst (2003), and Gibbons and Dorcas (2003).

• **FOSSIL RECORD.** Vertebrae of *Regina alleni* have been found in Pleistocene (Irvingtonian) deposits in Hillsborough County, Florida (Meylan 1995, Holman 2000), and Pleistocene (Rancholabrean) or Holocene fossils are known from Columbia, Dade, and St. Lucie counties, Florida (Auffenberg 1963; Hirshfeld 1968; Holman 1995, 2000).

• **PERTINENT LITERATURE.** Summaries of **natural history** are in Ditmars (1936), Carr (1940), Schmidt and Davis (1941), Ditmars (1945), Wright and Wright (1957), Duellman and Schwartz (1958), Behler and King (1979), Ashton and Ashton (1981), Jackson (1983), Ernst and Barbour (1989), Tennant (1997), Ernst and Ernst (2003), and Gibbons and Dorcas (2003). Details of **distribution** are in Cope (1877), Brimley (1910), Barbour (1920), Schmidt (1953), Neill (1958), Babbitt and Babbitt (1962), and Gibbons and Dorcas (2003). Other references are as follows: **systematics and taxonomy** (Schmidt 1953; Nakamura and Smith 1960; Smith and Huheey 1960; Rossman 1963, 1985; Rossman et al. 1982; Price 1983), **karyotype** (Eberle 1972, Kilpatrick and Zimmerman 1973), **sexual dimorphism** (Fitch 1981, Rossman et al. 1982), **maximum length** (Boundy 1995, Demuth 1997), **morphology** (Marx and Rabb 1972, Rossman et al. 1982), **visceral organ topography** (Rossman et al. 1982), **skull form and function** (Dwyer and Kaiser 1997), **vertebrae** (Johnson 1955), **cranial muscles** (Varkey 1979), **tooth structure** (Rojas and Godley 1979), **lungs** (Wallach 1998), **scales** (Cope 1891, Blanchard 1931), **biochemical evaluation** (Dowling et al. 1983), **hemoglobin values** (Goin and Jackson 1965), **reproduction** (Brimley 1903, Tschambers 1950, Neill 1951, Telford 1952, Wright and Wright 1957, Duellman and Schwartz 1958, Godley 1980, Ashton and Ashton 1981, Fitch 1981, Seigel and Ford 1987, Enge and Wood 1999–2000), **species diversity** (Dalrymple et al. 1991a), **ecology** (Auffenberg 1950, Godley 1980, Wilson and Porras 1983, Gibbons and Semlitsch 1987, Mushinsky 1987, Parker and Plummer 1987, Reinert 1993), **populations** (Godley 1980, Bancroft et al. 1983, Dalrymple et al. 1991a), **thermal ecology** (Brattstrom 1965), **habitat** (Wright 1926; Van Hyning 1933; Carr 1940; Goin 1943; Martof 1956; Duellman and Schwartz 1958; Neill 1958; Franz 1977; Godley 1980, 1982a; Dalrymple 1988; Dodd and Charest 1988; Reinert 1993; Wilson 1995; Tennant 1997), **activity** (Auffenberg 1950, Godley 1980, Ernst and Barbour 1989, Dalrymple et al. 1991b, Bernardino and Dalrymple 1992), **diet and feeding behavior** (Van Hyning 1932; Auffenberg 1950; Penn 1950; Bogert 1954; Franz 1977; Godley 1976, 1980; Godley et al. 1984; Mushinsky 1987; Dwyer and Kaiser 1997), **predation and defense** (Loenn-berg 1894; Wright and Wright 1957; Jackson et al. 1976; Godley 1980, 1982b; Dye 1982; Bancroft et al. 1983; Godwin 1992; Greene 1988; Spears 1977; Szelistowski and Meylan 1996; O'Brien 1998), **parasites** (Franz 1977, Stunkard and Franz 1977), **captive maintenance** (Franz 1977, Godley 1980, Rossi and Rossi 1995), **management and conservation issues** (Dodd and Charest 1988, Wilson 1995), **color morphs** (Cooper 1948), **checklists** (Cope 1875, Yarrow 1882, Stejneger and Barbour 1943, Schmidt 1953), and **common names** (Banks et al. 1987, Crother 2000, Collins and Taggart 2002).

• **REMARKS.** Price (1983) studied the microdermatoglyphics of the genus and concluded that *Regina alleni* and *R. rigida*, which possess micro-scale patterns he described as plicate with punctations, should be placed in the old genus *Liodytes*. Rossman (1985) refuted Price by listing a large series of characters, other than those microdermatoglyphic in nature, that both *R. alleni* and *R. rigida* share with the other members of the genus. Similar tooth morphology shared by *R. alleni* and *R. rigida* does indicate that they are most probably each other's closest relatives, as do recent studies of their skull morphology (Dwyer and Kaiser 1997). Whether this warrants allocation of *R. rigida* and *R. alleni* to a genus separate from *Regina* is equivocal.

Auffenberg (1950) assigned *R. alleni* from southern Florida to the subspecies *R. a. lineapiatus*, characterized by having ventral spots. Individuals from various parts of the range have either no ventral spots, spots only on the posterior half of the venter, or spots on the entire venter. Duellman and Schwartz (1958) examined specimens from throughout the range and determined that south Florida *R. alleni* are part of a continuous cline showing decreased ventral spotting toward the north. Auffenberg supposedly placed the holotype in the Florida Museum of Natural History, but it was never catalogued and is now missing (F.W. King and K. Auffenberg, *in litt.*).

• **ETYMOLOGY.** The specific epithet is a patronym in honor of J.A. Allen, the zoologist who collected the holotype.

• **ACKNOWLEDGMENTS.** Marie Hamilton, Liz Raulerson, Angela Page, and Tracey Tuberville helped compile literature. This research was supported by Award Number DE-FC09-96SR18546 (U.S. Department of Energy) and National Science Foundation grant (DUE-9980743) to MED.

LITERATURE CITED

Ashton, R.E., Jr. and P.S. Ashton. 1981. Handbook of Reptiles and Amphibians of Florida. Part One. The Snakes. Windward Publ., Inc., Miami.

Auffenberg, W. 1950. A new subspecies of the mud snake, *Liodytes alleni*. Herpetologica 6:13–16.

—. 1963. The fossil snakes of Florida. Tulane Stud. Zool. 10:131–216.

Babbitt, C.H. and L.H. Babbitt. 1962. An ecological study of a man-made pond in Georgetown, Florida. Florida Nat. 35:77.

Bancroft, G.T., J.S. Godley, D.T. Gross, N.N. Rojas, S.A. Sutphen, and R.W. McDiarmid. 1983. Large-scale operations management test of use of the white amur for control of problem aquatic plants. The herpetofauna of Lake Conway: species accounts. Final Rep. U.S. Army Corp. Eng. Aquatic Plant Contr. Res. Progr. Misc. Pap. A–83–5:1–252 + 2 app.

Banks, R.C., R.W. McDiarmid, and A.L. Gardner. 1987. Checklist of vertebrates of the United States, the U.S. Territories, and Canada. U.S. Dept. Int. Fish Wildl. Serv. Res. Publ. 166:1–79.

Barbour, T. 1920. Herpetological notes from Florida. Copeia 1920:55–57.

Behler, J.L. and F.W. King. 1979. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A. Knopf, New York.

Bernardino, F.S., Jr. and G.H. Dalrymple. 1992. Seasonal activity and road mortality of the snakes of the Pa-hay-okee wetlands of Everglades National Park, USA. Biol. Conserv. 62:71–75.

Blanchard, F.N. 1925. A key to the snakes of the United States, Canada, and Lower California. Pap. Michigan Acad. Sci. Arts Lett. 4:1–65.

—. 1931. Secondary sex characters of certain snakes. Bull. Antivenin Inst. Amer. 4:95–104.

Blaney, P.K. 1977. A survey of the microornamentation of snake scales. Unpubl. M.S. Thesis, Louisiana St. Univ., Baton Rouge.

Bogert, C.M. 1954. Amphibians and reptiles of the World, p. 1189–1390. *In* F. Drimmer (ed.), The Illustrated Encyclopedia of Animal Life; the Animal Kingdom: the Strange and Wonderful Ways of Mammals, Birds, Reptiles, Fishes, and Insects. A New and Authentic Natural History of the Wildlife of the World. Doubleday & Co., Garden City, New York.

Boulenger, G.A. 1893. Catalogue of the Snakes in the British Museum (Natural History). Vol. 1. Trustees, Brit. Mus. (Nat. Hist.), London.

Boundy, J. 1995. Maximum lengths of North American snakes. Bull. Chicago. Herpetol. Soc. 30:109–122.

Brattstrom, B.H. 1965. Body temperatures of reptiles. Amer. Midl. Nat. 73:376–422.

Brimley, C.S. 1903. Notes on the reproduction of certain reptiles. Amer. Nat. 37:261–266.

—. 1910. Records of some reptiles and batrachians from the southeastern United States. Proc. Biol. Soc. Washington 23:9–18.

Carr, A.F., Jr. 1940. A contribution to the herpetology of Florida. Univ. Florida Publ. Biol. Sci 3:1–118.

Collins, J.T. and T.W. Taggart. 2002. Standard Common and Current Scientific Names for North American Amphibians, Turtles, Reptiles, & Crocodilians. Ctr. N. Amer. Herpetol., Lawrence, Kansas.

Conant, R. and J.T. Collins. 1998. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. 3rd ed., exp. Houghton Mifflin Co., Boston, Massachusetts.

Cooper, B.W. 1948. An erythristic *Liodytes alleni*. Copeia 1948:304.

Cope, E.D. 1875. Checklist of North American batrachians and reptiles with a systematic list of the higher groups and an essay on geographic distribution based on the specimens contained in the United States National Museum. Bull. U.S. Natl. Mus. 1:1–104.

—. 1877. Rare snakes from Florida. Amer. Nat. 11:565.

—. 1885. On a collection of fishes and reptiles from Monterey, Nuevo Leon, Mexico. Proc. Amer. Philos. Soc. 22:167–194.

—. 1891 (1892). A critical review of the characters and variations of the snakes of North America. Proc. U.S. Natl. Mus. 14:589–694.

— 1898 (1900). The crocodilians, lizards, and snakes of North America. Rept. U.S. Natl. Mus. (1898):153–1294 + 35 pl.

Crother, B.I. (Comm. Chair). 2000. Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. SSAR Herpetol. Circ. (29):iii + 82 p.

Dalrymple, G.H. 1988. The herpetofauna of Long Pine Key, Everglades National Park, in relation to vegetation and hydrology. p. 72–86. *In* R.C. Szaro, K.E. Severson, and D.R. Patton (eds.), Management of Amphibians, Reptiles, and Small Mammals in North America. USDA Forest Service, Flagstaff, Arizona.

—, F.S. Bernardino, Jr., T.M. Steiner, and R.J. Nodell. 1991a. Patterns of species diversity of snake community assemblages, with data on two Everglades snake assemblages. Copeia 1991:517–521.

—, T.M. Steiner, R.J. Nodell, and F.S. Bernardino, Jr. 1991b. Seasonal activity of the snakes of Long Pine Key, Everglades National Park. Copeia 1991:294–302.

Demuth, J.P. 1997. *Regina alleni* (Striped Crayfish Snake). Size. Herpetol. Rev. 28:90–91.

Ditmars, R.L. 1936. The Reptiles of North America. Doubleday & Co. Inc., Garden City, New York.

— .1945. A Field Book of North American Snakes. Doubleday, Doran, Garden City, New York.

Dodd, C.K., Jr. and B.G. Charest. 1988. The herpetofaunal community of temporary ponds in north Florida sandhills: species composition, temporal use, and management implications. p. 87–97. *In* Management of Amphibians, Reptiles, and Small Mammals in North America: Proceedings of the Symposium, Flagstaff, Arizona, U.S.D.A. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. General Technical Report RM-166.

Dowling, H.G., R. Highton, G.C. Maha, and L.R. Maxson. 1983. Biochemical evaluation of colubrid snake phylogeny. J. Zoology (London) 201:309–329.

Duellman, W.E. and A. Schwartz. 1958. Amphibians and reptiles of southern Florida. Bull. Florida St. Mus. 3:181–324.

Dwyer, C.M. and H. Kaiser. 1997. Relationship between skull form and prey selection in the thamnophiine snake genera *Nerodia* and *Regina*. J. Herpetol. 31:463–475.

Dye, R.L. 1982. Sandhill cranes prey on amphiumas. Florida Fld. Nat. 10:76.

Eberle, W.G. 1972. Comparative chromosomal morphology of the new world natricine snake genera *Natrix* and *Regina*. Herpetologica 28:98–105.

Enge, K.M. and K.N. Wood. 1999–2000. A herpetofaunal survey of Chassahowitzka Wildlife Management Area, Hernando County, Florida. Herpetol. Nat. Hist. 7:117–144.

Ernst, C.H. and R.W. Barbour. 1989. Snakes of Eastern North America. George Mason Univ. Press, Fairfax, Virginia.

— and E.M. Ernst. 2003. Snakes of the United States and Canada. Smithsonian Inst. Press, Washington D.C.

Fitch, H.S. 1981. Sexual size differences in reptiles. Univ. Kansas Mus. Nat. Hist. Misc. Publ. (70):1–72.

Franz, R. 1977. Observations on the food, feeding behavior, and parasites of the Striped Swamp Snake, *Regina alleni*. Herpetologica 33:91–94.

Garman, S.W. 1874. Description of a new species of North American serpent. Proc. Boston Soc. Nat. Hist. 17:92–94.

Gibbons, J.W. and M.E. Dorcas. 2003. The Natural History of North American Water Snakes. Univ. Oklahoma Press, Norman.

— and R.D. Semlitsch. 1987. Activity Patterns, p. 396–421. *In* R.A. Seigel, J.T. Collins, and S.S. Novak (eds.), Snakes: Ecology and Evolutionary Biology. MacMillan Publ. Co., New York.

— and P.J. West (eds.). 1998. Snakes of Georgia and South Carolina. Savannah River Ecol. Lab. HerpOutreach Publ. (1), Univ. Georgia, Aiken, South Carolina.

Godley, J.S. 1976. Ontogenetic shifts in food habits of a crayfish eating specialist: *Regina alleni* (Serpentes: Colubridae). Herpetol. Rev. 7:84–85.

—. 1980. Foraging ecology of the Striped Swamp Snake, *Regina alleni*, in southern Florida. Ecol. Monogr. 50:411–436.

—. 1982a. Aquatic snakes in water hyacinth communities, p. 281–282. *In* D.E. Davis (ed.), CRC Handbook of Census Methods for Terrestrial Vertebrates. CRC Press Inc., Boca Raton, Florida.

—. 1982b. Predation and defensive behavior of the Striped Swamp Snake (*Regina alleni*). Florida Fld. Nat. 10:31–36.

—, R.W. McDiarmid, and N.N. Rojas. 1984. Estimating prey size and number in crayfish-eating snakes, genus *Regina*. Herpetologica 40:82–88.

Godwin, J.C. 1992. *Regina alleni* (Striped Crayfish Snake). Predation. Herpetol. Rev. 23:82.

Goin, C.J. 1943. The lower vertebrate fauna of the water hyacinth community in northern Florida. Proc. Florida Acad. Sci. 6:143–153.

— and C.G. Jackson. 1965. Hemoglobin values of some amphibians and reptiles from Florida. Herpetologica 21:145–146.

Greene, H.W. 1988. Antipredator mechanisms in reptiles, p. 1–152. *In* C. Gans and R.B. Huey (eds.), Biology of the Reptilia. Vol. 16. Ecology B. Alan R. Liss, New York.

Hirschfeld, S.E. 1968. Vertebrate fauna of Nichol's Hammock, a natural trap. Quart. J. Florida Acad. Sci. 31:177–189.

Holman, J.A. 1962. A Texas Pleistocene herpetofauna. Copeia 1962:255–261.

—. 1995. Pleistocene Amphibians and Reptiles in North America. Oxford Univ. Press, New York.

—. 2000. Fossil Snakes of North America: Origin, Evolution, Distribution, Paleoecology. Indiana Univ. Press, Bloomington.

Jackson, J.F., I. Ingram, and H.W. Campbell. 1976. The dorsal pigmentation pattern of snakes as an antipredator strategy: a multivariate approach. Amer. Nat. 110:1029–1053.

Jackson, J.J. 1983. Snakes of the Southeastern United States. Coop. Ext. Serv., Univ. Georgia, Coll. Agric., Athens.

Johnson, R.G. 1955. The adaptive and phylogenetic significance of vertebral form in snakes. Evolution 9:367–388.

Kilpatrick, C.W. and E.G. Zimmerman. 1973. Karyology of North American natricine snakes (family Colubridae) of the genera *Natrix* and *Regina*. Can. J. Genet. Cytol. 15:355–361.

Loennberg, E. 1894. Notes on reptiles and batrachians collected in Florida in 1892 and 1893. Proc. U.S. Natl. Mus. 17:317–339.

Martof, B.S. 1956. Amphibians and Reptiles of Georgia: A Guide. Univ. Georgia Press, Athens.

Marx, H. and G.B. Rabb. 1972. Phyletic analysis of fifty characters of advanced snakes. Fieldiana Zool. 63:1–321.

Meylan, P.A. 1982. The squamate reptiles of the Inglis IA fauna (Irvingtonian: Citrus County, Florida). Bull. Florida St. Mus. Biol. Sci. 27:2–79.

—. 1995. Pleistocene amphibians and reptiles from the Leisey Shell Pit, Hillsborough County, Florida. Bull. Florida Mus. Nat. Hist. 37:273–297.

Mushinsky, H.R. 1987. Foraging ecology, p. 302–334. *In* R.A. Seigel, J.T. Collins, and S.S. Novak (eds.), Snakes: Ecology and Evolutionary Biology. McGraw-Hill Publ. Co., New York.

Nakamura, E.L. and H. Smith. 1960. A comparative study of selected characters in certain American species of watersnakes. Trans. Kansas Acad. Sci. 63:102–113.

Neill, W.T. 1951. Notes on the natural history of certain North American snakes. Publ. Res. Div. Ross Allen's Reptile Inst. 1:47–60.

—. 1958. The occurrence of amphibians and reptiles in saltwater areas, and a bibliography. Bull. Marine Sci. Gulf Carib. 8:1–97.

O'Brien, C.J. 1998. *Regina alleni* (Striped Crayfish Snake). Antipredator behavior. Herpetol. Rev. 29:46–47.

Parker, W.S. and M.V. Plummer. 1987. Population ecology, p. 253–301. *In* R.A. Seigel, J.T. Collins, and S.S. Novak (eds.), Snakes: Ecology and Evolutionary Biology. McGraw-Hill Publ. Co., New York.

Penn, G.H. 1950. Utilization of crawfishes by cold-blooded vertebrates in the eastern United States. Amer. Midl. Nat. 44:643–658.

Perkins, C.B. 1940. A key to the snakes of the United States. Bull. Zool. Soc. San Diego 16:1–63.

—. 1949. A key to the snakes of the United States. Bull. Zool. Soc. San Diego 24:5–79.

Price, R.M. 1982. Dorsal snake scale microdermatoglyphics: ecological indicator or taxonomic tool? J. Herpetol. 16:294–306.

—. 1983. Microdermatoglyphics: the *Liodytes-Regina* problem. J. Herpetol. 17:292–294.

Reinert, H.K. 1993. Habitat selection in snakes, p. 201–240. *In* R.A. Seigel, J.T. Collins, and S.S. Novak (eds.), Snakes: Ecology and Evolutionary Biology. McGraw-Hill Publ. Co., New York.

Rojas, N.N. and J.S. Godley. 1979. Tooth morphology in Crayfish-eating Snakes, genus *Regina* (abstract), p. 52. *In* Progam, Jt. Meet. Herpetol. League and Soc. Stud. Amphib. Rept., 12 August 1979, Univ. Tennessee, Knoxville.

Rossi, J.V. and R. Rossi. 1995. Snakes of the United States and Canada: Keeping Them Healthy in Captivity. Vols. 1 and 2. Krieger Publ. Co., Malabar, Florida.

Rossman, D.A. 1963. Relationships and taxonomic status of the North American natricine snake genera *Liodytes*, *Regina*, and *Clonophis*. Occ. Papers Mus. Zool., Louisiana St. Univ. 29:1–29.

—. 1985. *Liodytes* resurrected, reexamined, and reinterred. J. Herpetol. 19:169–171.

Rossman, N.J., D.A. Rossman, and N.K. Keith.1982. Comparative visceral topography of the New World snake tribe Thamnophiini (Colubridae, Natricinae). Tulane Stud. Zool. Bot. 23:123–164.

Schmidt, K.P. 1953. A Check List of North American Amphibians and Reptiles. American Soc. Ichthyologists and Herpetologists, Chicago, Illinois.

— and D.D. Davis. 1941. Field Book of Snakes of the United States and Canada. G.P. Putnam's Sons, New York.

Seigel, R.A. and N.B. Ford. 1987. Reproductive ecology, p. 210–252. *In* R.A. Seigel, J.T. Collins, and S.S. Novak (eds.), Snakes: Ecology and Evolutionary Biology. MacMillan Publ. Co., New York.

Smith, H.M. and E.D. Brodie, Jr. 1982. A Guide to Field Identification: Reptiles of North America. Golden Press, New York.

— and J.E. Huheey. 1960. The watersnake genus *Regina*. Trans. Kansas Acad. Sci. 63:156–164.

Spears, G. 1977. Predation on colubrid snakes. M.S. Thesis, Univ. Florida, Gainesville.

Stejneger, L. and T. Barbour. 1943. A check list of North American amphibians and reptiles. 5th ed. Bull. Mus. Comp. Zool. 93:xix + 260 p.

Stunkard, H.W. and R. Franz. 1977. *Paratelorchis dollfusi* n. g., n. sp., a digenetic trematode from the Striped Swamp-snake *Regina alleni*: systematic and taxonomic considerations. Trans. Amer. Microsc. Soc. 96:383–389.

Szelistowski, W.A. and P.A. Meylan. 1996. *Regina alleni* (Striped Crayfish Snake). Predation. Herpetol. Rev. 27:204–205.

Telford, S.R., Jr. 1952. A herpetological survey in the vicinity of Lake Shipp, Polk County, Florida. Quart. J. Florida Acad. Sci. 15:175–185.

Tennant, A. 1997. A Field Guide to Snakes of Florida. Gulf Publ. Co., Houston, Texas.

— and R.D. Bartlett. 2000. Snakes of North America. Eastern and Central Regions. Gulf Publ. Co., Houston, Texas.

Tschambers, B. 1950. Number of young of *Liodytes alleni*. Herpetologica 6:48.

Van Hyning, O.C. 1932. Food of some Florida snakes. Copeia 1932:37.

—. 1933. Batrachia and Reptilia of Alachua County, Florida. Copeia 1933:3–7.

Varkey, A. 1979. Comparative cranial myology of North American natricine snakes. Milwaukee Pub. Mus. Publ. Biol. Geol. (4):1–70.

Wallach, V. 1998. The lungs of snakes, p. 93–295. *In* C. Gans and A.S. Gaunt (eds.), Biology of the Reptilia. Vol. 19. Morphology G, Visceral Organs. SSAR Contrib. Herpetol. (14). Ithaca, New York.

Wilson, L.A. 1995. Land Manager's Guide to the Amphibians and Reptiles of the South. The Nature Conservancy and U.S. Forest Service, Southern Region, Chapel Hill and Atlanta.

Wilson, L.D. and L. Porras. 1983. The ecological impact of man on the South Florida herpetofauna. Univ. Kansas Mus. Nat. Hist., Spec. Publ. (9):vi + 89 p.

Wilson, R.L. 1968. Systematics and faunal analysis of a Lower Pliocene vertebrate assemblage from Trego County, Kansas. Univ. Michigan Contrib. Mus. Paleontol. 22:75–126.

Wright, A.H. 1926. The vertebrate life of Okeefenokee Swamp in relation to the Atlantic Coastal Plain. Ecology 7:77–95.

— and A.A. Wright. 1957. Handbook of Snakes of the United States and Canada. Vol. 2. Comstock Publ. Assoc., Ithaca, New York.

Yarrow, H.C. 1882. Checklist of north american reptilia and batrachia with catalogue of specimens in U.S. National Museum. Bull. U.S. Natl. Mus. 24:1–249.

MICHAEL E. DORCAS, Department of Biology, Davidson College, Davidson, NC 28036 (midorcas@davidson.edu), **SEAN M. POPPY**, Savannah River Ecology Lab, Aiken, SC 29802, (poppy@srel.edu), **CARL H. ERNST**, Department of Biology, George Mason University, Fairfax, VA 22030-4444 (cernst@gmu.edu), and **J. WHITFIELD GIBBONS**, Savannah River Ecology Lab, Aiken, SC 29802 (gibbons@srel. edu).

Primary editor for this account, Larry David Wilson.